FIRST YEAR IN MATHS NSW & EDUCATION KNOWLEDGE NETWORK

Dialogue Across The Divide
A Free Professional Development Event

This event is supported by the Office of the Pro Vice-Chancellor (Learning Trans-formations) and the Centre for Research in Mathematics, Western Sydney University

Details:
Cost: Free! With Lunch & Afternoon Tea included.
Date: Tuesday 14th June, 2016
Time: 9.30 am – 5.00 pm
Venue: Western Sydney University, Parramatta City Campus*
Rooms: PC-X6.5.14 & PC-X6.5.15
Access:
>   **By Rail:** 5 minute walk from Parramatta Station
>   **By Car:** Paid Public parking available off George Street.
>   Please refer to attached map below.

Map:http://www.uws.edu.au/__data/assets/pdf_file/0004/945319/Parramatta_City_Campus_Map_FINAL.pdf
Standards: 1.2.2, 2.1.2, 6.2.2 & 7.4.2

Registration:

Completing First Year in Maths NSW Dialogue Across the Divide will contribute 6 hours of QTC Registered PD addressing 1.2.2, 2.1.2, 6.2.2 & 7.4.2 from the Australian Professional Standards for Teachers towards maintaining Proficient Teacher Accreditation in NSW.

EKN

* This is not the campus used for FYiMaths in July 2015. It is 100 George St Parramatta

Workshop Agenda

Time	Details
9:30am – 10:00am	Registration, tea/coffee
10:00am – 11:30am	**Margaret Bigelow, Nagla Jebeile and John Rice** The Australian National Curriculum
11:30am – 12:15pm	**Chris Tidsell** On Common Ground: Thoughts on how to get us collaborating
12:15pm – 1:25pm	Lunch

Stream X6.5.14

Time	Details
1:25pm – 1:50pm	**Jim Pettigrew** Word to the Web: converting maths-dense Word documents to media-rich websites
1:50pm – 2:15pm	**Usha Sridar** On the role of memorization of formulas and its effect in university learning of mathematics
2:15pm – 2:40pm	**Elena Prieto** Maths Tune Up!: Mathematics for equity and success in STEM degrees
2:40pm – 3:05pm	**Neil Hopkins** Flipped or flopped: experiences with a large cohort flipped classroom
3:05pm – 3:30pm	**Thanom Shaw** Proofs and Problem Solving

Stream X6.5.15

Time	Details
1:25pm – 1:50pm	**Mary Coupland** When are we ever going to need this? Let me show you
1:50pm – 2:15pm	**Geoff Carroll and David Houghton** What is Maths? Process vs concept, rigour vs result: teaching and learning mathematics at school and university
2:15pm – 2:40pm	**Janet Hunter** Increasing numbers in the calculus courses at the school level
2:40pm – 3:05pm	**Peter Brown** Role of History of Mathematics in teaching maths
3:05pm – 3:30pm	**Ayse Bilgin** Peer Learning in Statistics beyond the university curriculum

All Back Together	
3:30pm – 4:00pm	Afternoon Tea
4:00 – 4:15pm	**FYiMaths opportunities**
4:15pm – 5:00pm	**Echos from the day: panel discussion**
6:00pm - Late	Dinner: Temasek, 71 George St, Parramatta (own cost)

Information on presenters and presentations

Invited Speakers

Margaret Bigelow, Nagla Jebeile and John Rice: Margaret Bigelow is Curriculum Lead: Mathematics, ACARA, Nagla Jebeile is a Secondary Mathematics Australian Curriculum Advisor in NSW and Professor John Rice is the Executive Director of the Australian Council of Deans of Science.

The Australian High School Curriculum

Margaret Bigelow, Nagla Jebeile and John Rice will talk about the Australian Curriculum, Margaret from a national perspective, Nagla about the NSW approach, and John Rice will talk about the need for further curriculum development, mentioning as key examples the need to realise all of the proficiencies, and the need to develop an appropriate influence for algorithmic thinking.

> *Some time will be set aside for discussion*

Chris Tidsell is Associate Dean (Education) and a mathematician from the Faculty of Science, The University of New South Wales.

On Common Ground: Thoughts on how to get us collaborating

Our secondary and tertiary sectors should be working more closely together. The two groups of: high school teachers; and university educators, both have a wealth of skills, insight and understanding that can be used to inspire each other and to improve learning. What are the obstacles to making this happen and how can we overcome them? What initiatives facilitate collaboration and links between tertiary educators and high school teachers? In this presentation I will discuss these questions and showcase some practical examples that enable collaboration between tertiary and high-school groups.

Other Speakers

Ayse Bilgin is from Macquarie University

Peer Learning in Statistics beyond the university curriculum

Given that student engagement is becoming a big issue, I believe that peer learning could be one of the approaches we encourage students to be engaged, after all they are more likely to listen to their peers then their lecturers (whether we like it or not).

Peter Brown is from the University of NSW

Role of History of Mathematics in teaching maths

Mathematics has a rich and interesting history, which can be very useful in teaching. The History of Mathematics provides:

- A nice way to introduce a new topic
- Diverting stories which elicit and enhance student interest
- Good motivation as to why we are interested in a particular piece of Mathematics
- A very rich source of problems and examples, for lectures, assignments and exams

This brief talk will provide some examples of these things

Geoff Carroll and David Houghton are from Sydney Grammar School
What is Maths? Process vs concept, rigour vs result: teaching and learning mathematics at school and university
David and Geoff will explore how syllabus, practice, assessment and even rhetoric can reveal the varieties of responses to the provocative question, "What is Maths?" What teachers do, say, ask, and think teases out this question, and shapes the student experience. Finally, how might we bridge the gap between the rhetoric and the practice of teaching?

Mary Coupland is from UTS
When are we ever going to need this? Let me show you
This session will provide answers for teachers so they can demonstrate to students that yes, there are real people using real quadratic equations/trig functions/exponential functions/integration to solve real problems in science and engineering.

Neil Hopkins is from Western Sydney University
Flipped or flopped: experiences with a large cohort flipped classroom
Statistics for Business is a core unit for first year Business students. In 2012 it was decided to replace the lectures with online videos including case studies for each topic. This talk will attempt to determine if this has been a success or not by looking at the pass rate and average mark.

Janet Hunter is from Ascham School
Increasing numbers in the calculus courses at the school level: smoothing the transition from School to University
Now that Sydney University has made (2 unit) Mathematics a prerequisite to study science related courses it is expected that other universities will follow suit. This comes at a time when over half the candidature in NSW is studying General Mathematics which includes no calculus. Measures to encourage students to do the calculus courses begins in Year 8. Some anomalies with the current NSW senior syllabus will also be discussed.

Jim Pettigrew is from Western Sydney University.
Word to the Web: converting maths-dense Word documents to media-rich websites
In this talk I will explain a process that converts Word documents to websites. The process is designed to deal with large volumes of mathematical typesetting, preserve the source documents' structure, and allow for easy customisation of the HTML, CSS and JavaScript end product. Aside from addressing some of the technological aspects of this process, the talk will invite discussion about what it means to transfer content from static text-based documents to dynamic and interactive online resources.

Elena Prieto is from the University of Newcastle
Maths Tune Up!: Mathematics for equity and success in STEM degrees
In this talk I will talk about a series of animated videos designed at the University of Newcastle to help university students develop their maths skills. The videos cover a wide range of mathematical concepts that students need to understand in order to stay on top of their studies.
Continued on next page.

Each video provides a short reminder of a different mathematical concept, runs for just a few minutes, and includes easy-to-follow explanations and examples. As well as the videos, the Maths Tune Up! website features practice questions with solutions and working out, plus downloadable resource sheets that summarise each topic.

Thanom Shaw is from SCEGGS Darlinghurst.
Proofs and Problem Solving
Clear, concise, valid arguments and their communication are an essential part of many aspects of life, and they are exemplified in proof which lies at the heart of mathematics. But sometimes it seems that very few want to take responsibility for really helping students master it. In NSW high schools, students get introduced to proof in Geometry as well as the method of proof by induction, but the formulaic approaches taught and memorised hardly help students develop the ability to find arguments for themselves and to write without templates and scaffolds. As the visit-ing teaching fellow at UNSW in 2014 I was impressed by their endeavours to teach proof in Discrete Mathematics in first year. But in this university setting with tutorials and assessments the way they are, students still end up trying to memorise particular sorts of proof they have been shown, instead of trying to develop and improve their own skills in this area. It's definitely tempting to present students with structured approaches but I think it may be more effective for students to develop their reasoning and communication skills more naturally through problem solving. I would like to show you what this can look like in the classroom using problems from the Mathematics Challenge for Young Australians.

Usha Sridar is from UTS
On the role of memorization of formulas and its effect in university learning of mathematics
A study of the methods adopted in high school assessments of maths and their influence in transition to University learning of maths is investigated with some case studies. The role of memorizing formulas is emphasized among other recommendations.